The Big Picture: 2022 Metals and Mining Industry Outlook

A look ahead to the key strategic trends and opportunities expected to drive the metals and mining industry narrative through 2022 and beyond

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Introduction

As the global economy began recovering from the pandemic in the second half of 2020, the metals and mining sector benefited from rebounding commodity prices. Demand for most metals was driven upward by the release of pent-up consumer spending, new government stimulus efforts and an accelerating global energy transition. Having emerged significantly leaner following the 2013-2016 downturn, the industry has roused itself to tackle new opportunities while looking to avoid a repetition of past excesses.

The Take

Global efforts to combat the COVID-19 pandemic hampered most aspects of the metals and mining industry in the first half of 2020. The sector's rapid rebound in the second half, and rising demand for most mining commodities, has created robust conditions for producers and explorers. We expect these conditions to persist into 2022, and in some cases beyond. While we anticipate that metals prices will slip somewhat in 2022 from their current highs, medium-term supply constraints are setting the stage for historically above-average prices through to 2025 — driven mostly by increasing demand for materials used in the accelerating global energy transition.

The supply constraints are expected to persist despite intensive exploration efforts, which we forecast to expand further in 2022. Exploration will continue to focus on regions that have largely mitigated the pandemic's impacts; however, few of the resulting discoveries will be developed in time to meet medium-term supply requirements. Faced with persistent if moderating demand, the industry is set up for a period of sustained growth.

Demand: Supply chain squeeze and power shortages lower economic growth forecasts

Ronnie Cecil, Principal Analyst

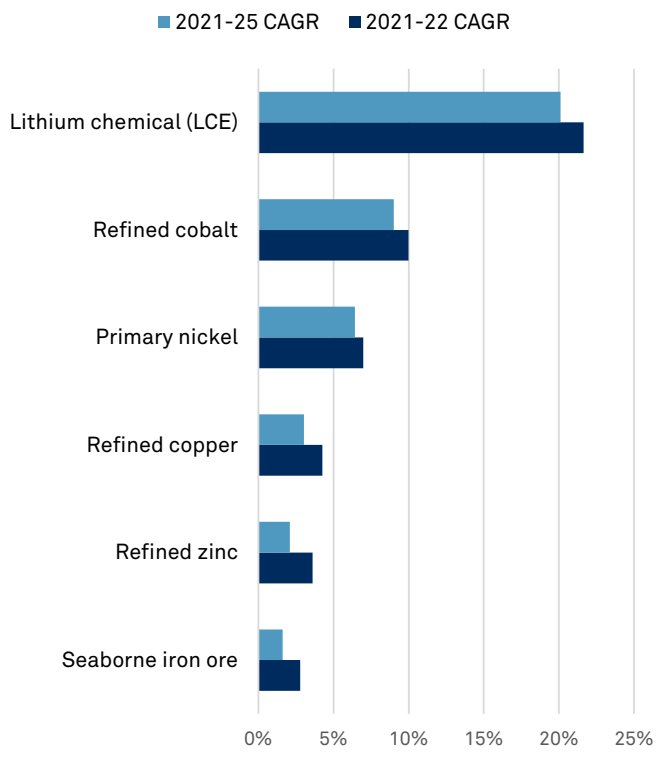
Global economic activity slowed in the September quarter as surging energy prices, labor shortages and Chinese power restrictions disrupted the global supply chain. China's intensifying decarbonization drive has led to restrictions on power usage in the industrial sector, including by metals smelters. The slowdown in China's manufacturing sector contrasts with the robust activity seen in Europe and the U.S., although rising energy prices threaten post-pandemic recovery in those regions.

Depleted coal inventories are a key reason for power restrictions in China; however, the restrictions are expected to ease with a number of reported coal shipments expected to arrive before the country's winter begins. Low gas inventories in Europe have led to high natural gas prices, which is stoking inflationary pressure there and in the U.S. The European Central Bank and the U.S. Federal Reserve have kept interest rates on hold for the time being, and although the Fed continues to indicate support for the U.S. economy, a tapering of its asset-purchasing program is expected in 2022.

At the end of September, S&P Global Ratings lowered its global economic growth forecast for 2021 to 5.8% from 6.0% in response to the Chinese slowdown. China and the U.S. had the biggest country downgrades, with growth at 8.0% and 5.7%, respectively. The slowing growth trend is expected to continue into 2022, with global GDP forecast to rise 4.4% and GDP in China and the U.S. forecast to rise by 5.1% and 4.1%, respectively.

We expect China to export fewer manufactured goods in 2022, while Chinese industrial production is set to be less energy intensive. Private sector Chinese property developers are expected to undergo further belt tightening, although an increase in state-sponsored property investment should support the sector. The global automotive sector is struggling with a computer chip shortage, which is expected to last well into 2022 and keep auto production on a tight leash. China's demand constraints will likely be eased by the coal supply response, which could hamper the country's decarbonization drive. Inflationary pressures are likely to be a key theme in 2022 as the global supply chain continues to play catch-up.

Figure 1: Commodity demand outlooks



Data as of Oct. 19, 2021.
LCE = lithium carbonate equivalent
Source: S&P Global Market Intelligence

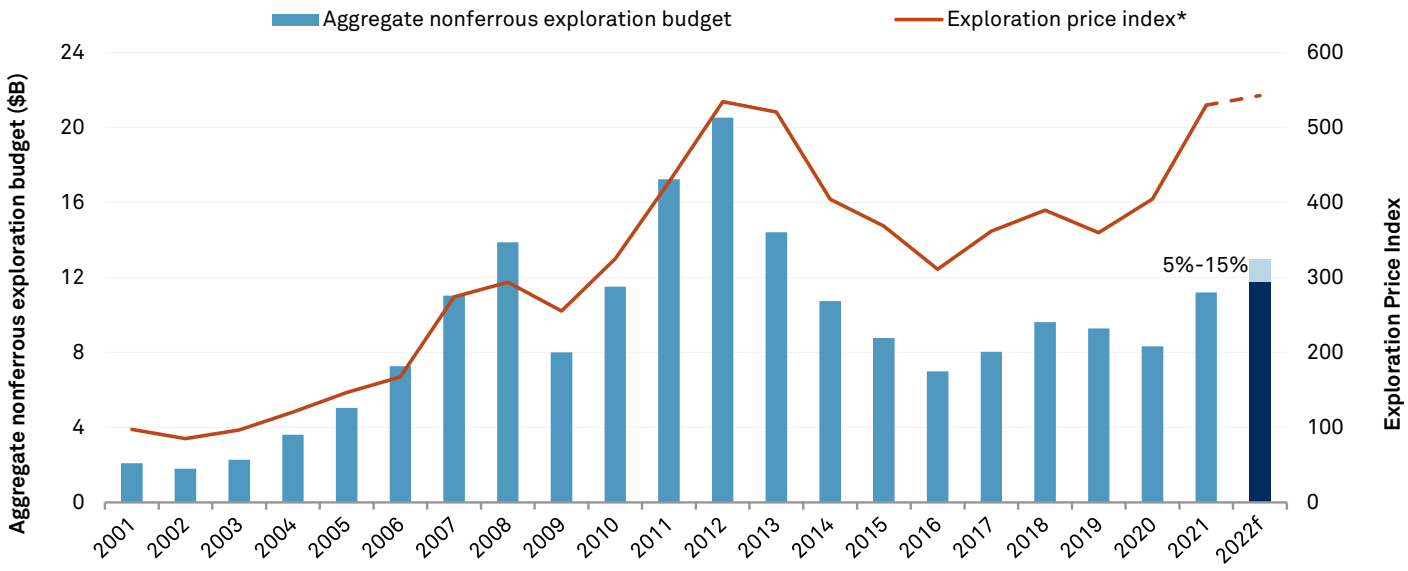
Exploration: Energy transition, global economic growth to drive higher budgets

Kevin Murphy, Principal Analyst

As shown in our Corporate Exploration Strategies series, the pandemic-driven harsh downturn in early 2020 caused exploration budgets to drop 10% year over year to $8.3 billion. Fortunately, the mining industry pullback, although deep, was very short. The quicker-than-expected recovery allowed companies to return to the field and resume their exploration programs. Financial markets also rebounded, providing junior explorers with easier access to funds. This resulted in actual exploration spending for 2020 coming in 6% higher than the year's budget at just under $9.0 billion. A combination of strong metals prices, easy access to financing, programs delayed in the first half of 2020 running over into the following year and fewer pandemic restrictions drove a 35% increase in exploration budgets to $11.2 billion in 2021. As heartening as this increase is, it is important to see the industry's budget performance from a historical perspective. The last period in which metals prices performed as well as they did from mid-2020 to mid-2021 was back in 2011-12. Exploration budgets in 2012 totaled over $20.5 billion, or 83% higher than in 2021.

As 2022 nears, the pandemic recovery continues to keep metals prices elevated, which is maintaining investor interest in the mining sector. Financings by junior and intermediate companies totaled $14.8 billion for the first nine months of 2021 — well above the $12.1 billion raised in all of 2020. Should this trend continue through the first few months of 2022, we expect the year's global exploration budget to be 5%-15% above 2021. The increase will not be felt evenly across all mining commodities, however. Gold, which appears to have found a new base level above $1,700 per ounce, should perform well again in 2022 and maintain its status as the primary exploration target by a wide margin. High interest in energy transition metals should push copper and nickel up more than the average and maintain interest in lithium and cobalt exploration. We expect diamonds, platinum group metals and uranium — all of which have underperformed over the past decade — to disappoint again in 2022.

Figure 2: Exploration budgets, 2001-22



Data as of Sept. 25, 2021.

f = forecast

* The Exploration Price Index is calculated using the metals prices in the second half of the previous year. The index measures changes in precious and base metals prices, weighted by the percentage of the total exploration budget attributed to each metal as a proxy of the relative importance of each to the industry at a given time.

Source: S&P Global Market Intelligence

Iron ore: Decarbonization drive curbs Chinese steel production

Ronnie Cecil, Principal Analyst

China's intensified decarbonization drive has applied the brakes to Chinese steel production in the second half of 2021, with negative implications for iron ore demand and prices. The Chinese steel sector, which accounts for an estimated 15% of the country's carbon emissions, aims to reach peak emissions by 2025 and to achieve a 30% reduction from the peak by 2030. These targets are set in accordance with the country's overall plan for a carbon emissions peak by 2030 and carbon neutrality by 2060.

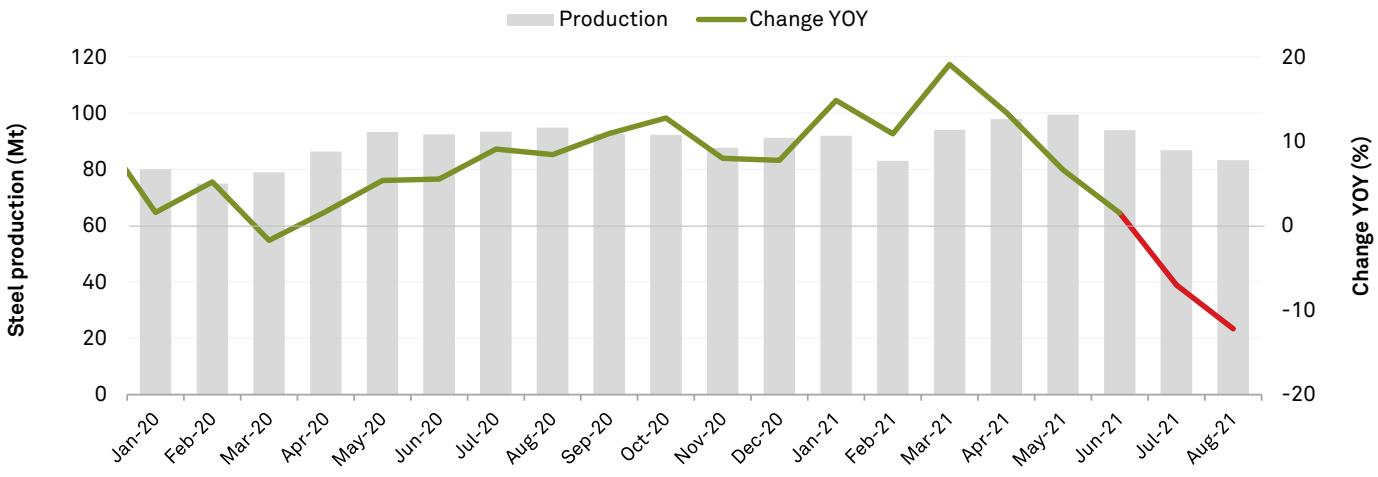
Chinese steel output fell for the third consecutive month in August. While this has dampened steel output growth year-to-date, pig iron production has slowed more acutely. The supply constraints have buoyed domestic steel prices and, coupled with the recent drop in iron ore prices, led to a spike in Chinese steel mill profit margins in September. Chinese iron ore imports in the first eight months fell 12.5 million tonnes year over year, with higher shipments from Brazil and lower shipments from Australia as the country reduces its reliance on Australian commodities.

Over the coming years, China's decarbonization push is expected to cause blast furnace closures, leading us to forecast an 18 million-tonne reduction in Chinese pig iron output in 2020-22. Demand for high-grade iron ore is expected to benefit from the decarbonization push, due to the lower impurities and correspondingly higher productivity that it offers. Lower impurity iron ore consumes less coke and therefore emits less carbon. This is expected to benefit the direct-feed iron ore products, pellet and lump, and reinforce the premiums for high-grade iron ore.

China has imported more ferrous scrap year-to-date after relaxing import restrictions. We expect to see increased scrap usage in Chinese steelmaking in 2022 and beyond, at the expense of iron ore-dependent pig iron. The recovery in ex-China steel production is also expected to moderate going into 2022, as surging power prices prompt electric arc furnace-based steel producers to reduce output.

We expect global seaborne iron ore supply growth to struggle, with few mine capacity additions in the pipeline. Rising environmental, social and governance hurdles could also potentially delay mine replacement projects in Australia and planned restarts in Brazil. The combination of underlying market tightness, potential supply disruptions and project delays, global supply chain issues and power constraints is likely to fuel increased iron ore price volatility into 2022.

Figure 3: Decarbonization drive curbs Chinese steel production since record monthly high in May



Data as of Oct. 19, 2021.
Sources: World Steel Association; National Bureau of Statistics - China

Copper and zinc: Refined copper deficit in 2021-25 to support price; zinc price to rise on falling Chinese production

Aline Soares, Senior Analyst; **Mitzi Sumangil,** Associate Commodity Analyst

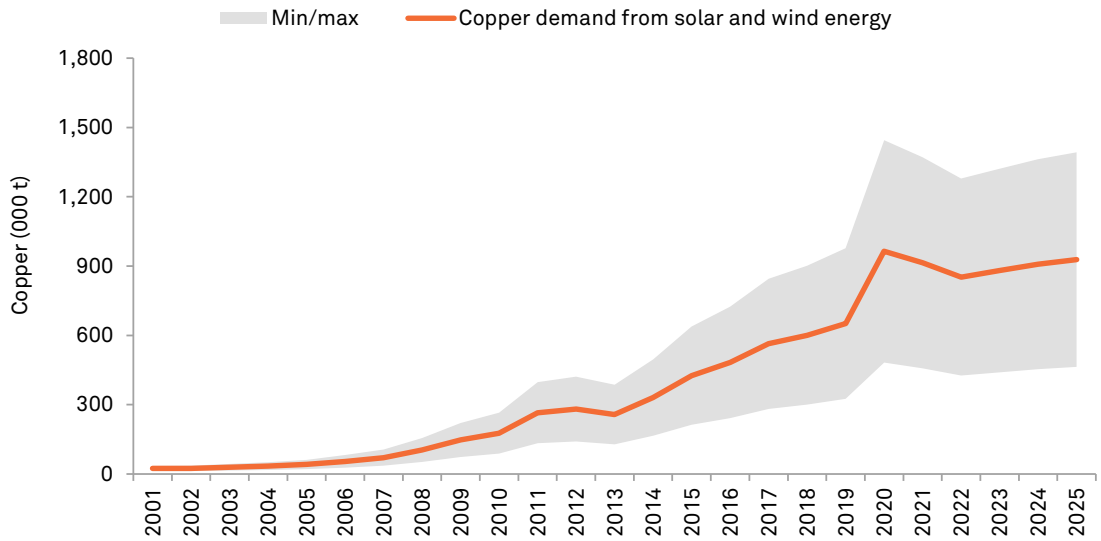
Copper and zinc prices have soared in October, due to curtailed production of refined copper and zinc amid power shortages in China. Although the energy crisis may take some time to resolve, sustaining elevated copper and zinc prices, it could negatively impact economic growth in 2022. On the supply side, mined copper output is expected to rise to 23.8 Mt in 2022 from 21.2 Mt in 2020, relieving tightness in the concentrate market. The industry still faces a big challenge, however, as our production forecasts for operating mines do not account for any ESG-related disruptions — an important factor that has affected mines, mainly in Chile where a water shortage has constrained output at some operations.

Most committed expansions are in Chile, and greenfield projects are mainly located in Peru, Russia and Democratic Republic of Congo, or DRC. The two largest greenfield mines are Kamoa-Kakula in DRC, which started up in June, and Anglo American PLC's Quellaveco mine in Peru, which is expected to ramp up by mid-2022. Including both concentrate and solvent extraction-electrowinning output, Minsur SA's Marcona and AO Holding Co. Metalloinvest's Udokan are two other projects with average annual production above 100,000 tonnes. In terms of brownfield projects, the output of the three largest — Grasberg, Chuquicamata and Oyu Tolgoi — will account for more than 60% of total additional production in 2022.

The refined copper output growth will lag refined copper demand in 2021-25, however. With its significant use in solar photovoltaic panels, wind power generation and electric vehicle production, copper will be the key beneficiary of the energy transition. We forecast global copper demand from solar and wind energy generation to reach 852,000 tonnes in 2022 and the growing electric vehicle market to account for 1.1 Mt in 2022. In addition, we expect rising demand due to expanding electrification infrastructure and upgrades to telecommunications infrastructure, particularly in China and the U.S.

Although zinc demand in the energy transition will be a corollary to copper demand, zinc is used in renewables to protect against corrosion, and we might see some advancements in the zinc energy battery storage space. These advancements are still subject to the challenges of lower life cycle and rechargeability compared with lithium-ion batteries. The zinc price will remain elevated, however, with fewer mines expected to start up in 2022-25 — especially in China, where mined zinc is estimated to decline to 3.8 Mt within the forecast period.

Figure 4: Copper demand from solar and wind energy spiked in 2020 and remains strong in coming years



Data as of Oct. 19, 2021.
Source: S&P Global Market Intelligence

Battery metals: Plug-in electric vehicle sales growth will be key to battery metal demand

Alice Yu, Senior Analyst; **Jason Sappor,** Senior Analyst

This year is expected to set another record for global plug-in electric vehicle, or PEV, sales, supported by ever-rising model availability, consumer incentives and producer penalties. A prolonged computer chip shortage has constrained full EV sales potential in 2021, both of which are expected to extend into 2022. We remain cautiously optimistic on PEV sales in 2022, with risks to the downside.

China, as the largest passenger PEV market, has had a sustained aggregate penetration rate for battery electric and plug-in hybrid electric vehicles above 19% since August, giving hope that the country could hit its 2025 target of 20% PEV penetration ahead of schedule.

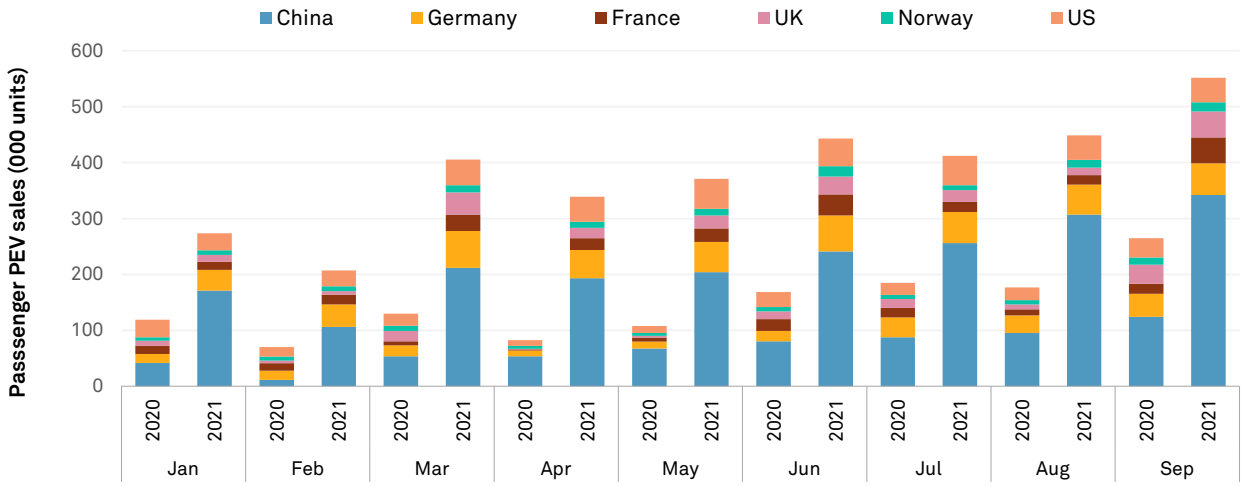
PEV sales momentum in the European Union has been led since 2020 by the fleetwide car emissions penalty threshold of 90 grams or less of carbon dioxide per kilometer, with sales growth from 2022 onward benefiting from the higher vehicle emissions reduction targets for 2030 laid out under the Fit for 55 legislation package. In the U.S., optimism over promises of enhanced EV incentives and support persists, despite delays for two key bills instrumental to the country's sector. These include the $3.5 trillion reconciliation bill, entailing an EV tax credit of up to $12,500, and the $1 trillion infrastructure bill, supporting a charging network and electric school and transit buses.

After three years of prices trending downward, the seaborne Asia lithium carbonate price and the ex-works China lithium carbonate price jumped 91% and 162%, respectively, in the first nine months, as unexpected demand increases combined with a slow expansion in supply. Active lithium M&A and unprecedented financing for junior and intermediate explorers in 2021 are likely to improve medium-term supply; however, demand-supply mismatches could persist in 2022 if unexpected demand increases continue.

The cobalt market has been hampered by low efficiency at the Port of Durban since May 2020. We expect supply flows to improve in 2022, however, boosted by the Mutanda restart and the Tenke Fugurume expansion. With battery-related demand expected to rise despite cobalt thrifting, the additional supply will balance the market.

The London Metal Exchange three-month, or LME 3M, nickel closing price surged to a seven-year high of $20,392 per tonne Sept. 10 on dwindling LME stocks resulting from supply disruptions, recovering stainless steel sector activity and strong demand from the EV sector in 2021. We nevertheless expect primary nickel supply to increase faster than PEV-related demand in 2022, as Indonesian output continues to expand; this will put downward pressure on the LME 3M price in 2022.

Figure 5: Passenger PEV sales across 6 markets rose 165% YOY despite chip shortage dampening overall car sales



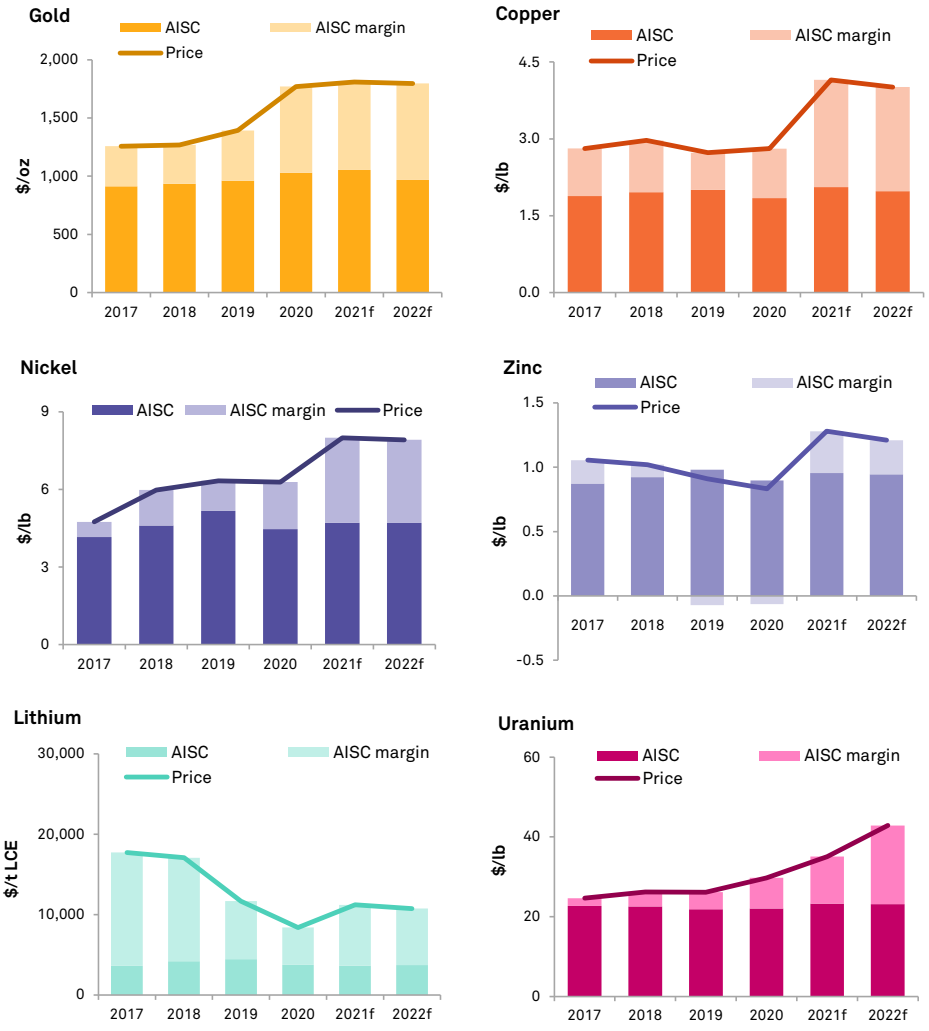
Data as of Oct. 18, 2021.
PEV = plug-in electric vehicle
Sources: S&P Global Market Intelligence; official releases

Mining costs and margins: Margins to remain strong in 2022 despite rising input costs

William Mason, Mining Research Analyst

Many producers are having a banner year in 2021 as strong prices for most commodities have combined with recovering production to fuel healthy margins. Our analysis leveraging the Mine Economics models supports this trend to continue into 2022, although downside risks are emerging, with inflationary pressures likely to impact many operations' input costs.

Figure 6: Margins remain strong through 2022 in metals and minerals markets



Data as of Oct. 18, 2021.

f = forecast

AISC = all-in sustaining cost

Costs presented on a coproduct basis.

Consensus price forecasts for gold, copper, nickel, zinc and uranium. Lithium Commodity Briefing Service forecast price.

Source: S&P Global Market Intelligence

With gold and most base metals prices forecast to soften by only 1%-5% in 2022, all-in sustaining cost, or AISC, margins are set to remain at historically high levels throughout the metals markets. Gold producers have benefited the most since the emergence of the pandemic, with AISC margins of about 72% for both 2020 and 2021. Margins are forecast to rise above 85% in 2022, hitting a historical high as gold producers benefit from a modest increase in head grades and a sustained high price.

Notably, the bullish copper market is forecast to support consecutive years of AISC margins over 100% in 2022, which last occurred in 2010. Copper AISC has increased 10% year over year in 2021, with rising labor and other minesite costs the major contributors — mainly driven by currencies strengthening against the U.S. dollar. Nickel margins are following a trend similar to copper's, as profitability for both commodities is slated to decrease 2%-3% in 2022. After two years of negative zinc margins, strong zinc prices will drive them back into positive territory in 2021. While costs are expected to remain relatively flat in 2022, softening prices will contribute to margins decreasing 18% year over year, although they will remain well into positive territory.

Higher raw material costs have led to rising inflation globally — a trend likely to impact mining operations in 2022. Inputs such as fuel, electricity and equipment are of particular concern for producer costs, adding downside risks to 2022 margins should inflationary pressures persist throughout the year.

Further reading

Copper project pipeline — Project shortage to see supply lag demand post-2025

Green energy revolution — Boost for industrial metals demand

CES 2021 — Global exploration budget up 35% YOY on high metal prices, financings

Copper CBS October 2021 — Copper price rise on energy-related supply constraints

Battery choice scenario analysis: Cobalt negatively impacted; nickel sees upside

Methodology

Data referenced in this report was compiled from a variety of sources, including proprietary surveys and analyst estimates, publicly listed company reports and third-party providers. Proprietary supply, demand and price forecasts included in The Big Picture are sourced from our Commodity Briefing Services covering iron ore, copper, zinc, nickel, and lithium and cobalt. Exploration trends are derived from our annual Corporate Exploration Strategies series covering exploration budgets, supplemented by monthly assessments of project and financing activity levels within our Industry Monitor publication. Production costs and margins are derived from our Mine Economics mine cost modeling database.

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